THE UNIVERSITY OF WASHINGTON

Arboretum bulletin

SUMMER
1962

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Arboretum bulletin

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COVER PHOTO

Pterostyrax hispida in flower, Arboretum, June 12, 1959

PHOTO BY: WILLIAM ENG

The Values of the Arboretum

Dr. Charles E. Odegaard

The Bulletin *is privileged to present the statement of Dr. Charles E. Odegaard, President of the University of Washington, at the hearing convened by the Seattle City Council on April 30, 1962, to gather evidence on alternate routes proposed for the extension of the R. H. Thomson expressway (Empire Way) along the western edge of the Arboretum.*

His initial statement was supported and extended by others from the Director of the Arboretum, members of the University administration staff, faculty members from several colleges or departments which utilize the Arboretum's facilities and plant collections, by the president of the Arboretum Foundation and representatives of other interested bodies.

After a lengthy hearing, which continued well into a second day, the City Council voted unanimously to maintain their previous approval of the more westerly route of the two proposals, that which does the lesser damage to the Arboretum both in land required and to existing plantings.

I APPRECIATE the privilege of making some comments on behalf of the Board of Regents of the University of Washington under whose management and supervision over a quarter of a century an Arboretum of world reputation has been developed in Seattle.

The issue before the City Council turns on the choice of routes for the Thomson Expressway which may either skirt the edge of the Arboretum with only a small invasion of it as proposed by the City Engineer or which may, according to another proposed plan, cut a deep swath through the Arboretum. The position of the Board of Regents on this issue was previously presented in November, 1959, when the City Engineer's plan was supported by the Regents. The Regents of the University still vigorously recommend that plan and strenuously object to further inroads into what is already the constricted area of the Arboretum.

Since the University acquired responsibility for the area of the Arboretum, quite apart from the value which undeveloped land would have, the Arboretum area has appreciated in value through large expenditures of funds for its development. But it has also acquired other values for which dollar expressions are inadequate or irrelevant but which civilized people would recognize.

The University treasures the Arboretum because of four functions it performs which are of inestimable value to the public interest. It is (1) a laboratory for research, (2) a specialized classroom for students in University courses, (3) a resource for continuing education of adults with various kinds of interest which bring them to the Arboretum, and (4) an open park area which gives the city breathing room for the recreational and aesthetic enjoyment of its people.

Professors at the University use the Arboretum for research projects in botany, zoology, forestry, and landscape architecture. They, as well as professors in art, architecture, and urban planning bring students in courses to the Arboretum for observations and demonstrations. Formal and informal courses built around the special features of the Arboretum are presented to youth groups, elementary and secondary school teachers, garden clubs and nature study clubs. Innumerable individuals

enrich their personal knowledge by following the self-guiding tours arranged by the Arboretum staff and by carrying out independent studies.

The educational importance of the Arboretum cannot help but increase in the years ahead. Larger enrollments at the University will impel even larger use of the Arboretum for instruction. The educational opportunities afforded by the Arboretum increase every year, because they increase through the passage of time: research into living things must be paced to the life span of the individual specimens studied; each passing year that its plantings remain undisturbed under controlled conditions the scientific value of the Arboretum grows.

The mere increase in population in the Seattle metropolitan area makes every square foot of green in a park-like environment increase in importance to the public for its enjoyment, as well as for its mental health and its spiritual refreshment from miles of unrelieved concrete.

It must be borne in mind that the Arboretum even in its earlier dimensions was not a large expanse of open land. Compared with other respected arboretums, its restricted size has always required very careful planning and management. Lake Washington Park and Foster Island originally comprised 272.56 acres, and of these only 244 acres have ever been available for long-term Arboretum purposes. This area has been reduced by the approaches to the second Lake Washington Bridge by 51.5 acres, from 244 acres to 193 acres. Were the alternate route to be adopted for the Thomson Expressway 24 more acres would be lost.

This 12.5% reduction in usable area from 193 acres to 169 acres on top of what already has happened to the Arboretum would be a devastating reduction in volume alone. When one realizes that it sweeps away the Japanese Tea Garden which has recently brought such attention and distinction to Seattle, and that it sweeps away the whole of the lilac collection and the major portion of the slow-growing Pinetum, one can only conclude in my judgment that the alternate route is disastrous in proportions and would be the making of a national disgrace.

There are very substantial dollar values as well as intangible values in the Arboretum and in the specific area affected, as experts from the University of Washington can testify. There are public necessities which humane and civilized people will recognize and which are respected by the City Engineer's proposed route. On this kind of issue, Seattle's claim to greatness as a human society will rest.

Last week one of the world's distinguished scientific and humanistic thinkers, Sir Julian Huxley, initiated the John Danz Lectureship on the University of Washington campus. Quite unaware of the threat in Seattle to the Arboretum, he nevertheless said something which should be in the heart and mind of every man considering this issue today. I quote the following excerpts from his lecture:

"We must think more in terms of conservation . . . of living resources like timber, semi-living resources like soil, enjoyment resources like beautiful scenery and open space . . . Here in the Northwest you are lucky . . . but the threat will increase . . . I hope you won't relax in favor of pressures . . . Man can no longer regard himself . . . as Lord of Creation or as . . . conqueror of nature . . . He must be a responsible partner in this process of which he is a product and of which he is a part and in which he plays a role . . . The Golden Rule applies to nature as well as . . . between . . . human beings . . . Treat nature well; otherwise you can't expect nature to do anything but treat you badly . . ."

I urge you, ladies and gentlemen of the City Council, to support the route recommended by the City Engineer.

Especially for the benefit of our numerous visitors this summer THE BULLETIN *presents a group of authoritative articles summarizing the variety and kinds of plants in three important categories—Trees, Shrubs, Ground Covers—grown in gardens around Puget Sound. And, because we realize its importance to us, emphasis is also given to a recent official statement on our climate by a recognized expert on the subject. We hope all these will be informative and useful to our readers, whether regular or casual.*

The Climate of Seattle, Washington

EARL L. PHILLIPS

SEATTLE is 90 miles inland from the ocean and in the heart of the Puget Sound country. The City is located on a hilly stretch of land overlooking the salt water of Puget Sound on the west and the 18-mile long Lake Washington on the east. Lake Washington's shoreline roughly parallels that of Puget Sound at distances ranging from 2½ miles to 7 miles. Hills rise rather abruptly from both shores and reach elevations of 300 to 500 feet within the City. The commercial district and civic center are located along the east shore of Elliott Bay. In an easterly direction and within 30 miles, the Cascade Mountains rise to elevations of 5000 to 7000 feet with snowcapped peaks in excess of 10,000 feet. This range is very effective in protecting the Puget Sound region from the higher summer and lower winter temperatures observed in eastern Washington. Across Puget Sound and about 40 miles from the City, in a west to northwest direction, the Olympic Mountains rise to elevations of 4000 to 7000 feet and shield Seattle from the more severe winter storms moving eastward across the north Pacific.

The climate is predominantly a mid-latitude, west coast marine-type with a dry season and pleasant temperatures during the summer, rather mild but rainy winters, moist air, and a small range in temperature. Some of the factors influencing the climate are: terrain, distance and direction from the ocean and the position and intensity of the high and low pressure centers located over the north Pacific. A clockwise circulation of air around the high pressure area—which spreads northward into the Gulf of Alaska in the late spring and summer—brings a flow of air from a northwesterly direction into the State. This air is relatively dry and cooler than the surface of the land and results in a dry season beginning in the late spring and reaching a peak in mid-summer. During July and August, it is not unusual for two or three weeks to pass without any measurable precipitation. A typical summer afternoon has temperatures in the upper 70s and the nighttime readings are in the 50s. Each year, the temperature exceeds 80° on an average of 17 days, rises above 90° on about two afternoons and 100° has been recorded twice since 1893. Occasionally, easterly winds will bring unusually warm dry air into the Puget Sound region for brief periods. The highest temperatures and lowest relative humidity are observed under these conditions. A combination of high temperature and moist air, an atmospheric condition unpleasant to the average person, occurs very rarely. The growing season is long-lasting—from about the first of April to

*A climatological summary published by the U. S. Dept. of Commerce, Weather Bureau, in conjunction with the Washington State Dept. of Commerce & Economic Development. Mr. Phillips is State Climatologist with the Weather Bureau in Seattle.

the first of November. During the summer, the wind is often very light in the morning and a northerly breeze of 10 to 15 mph. can be expected most afternoons. However, there is sufficient movement of air throughout the year to prevent any appreciable accumulation of smoke or other air pollution materials.

In the fall and winter, the low pressure center near the Aleutian Islands intensifies and moves southward and the high pressure area becomes smaller and also moves southward. A circulation of air around these two pressure regions in the north Pacific brings a prevailing flow of warm moist air from a southwesterly direction into the State. This results in mild winter temperatures for this latitude and a rainy season beginning in October, reaching a peak in mid-winter, then decreasing in the spring.* On a typical winter day, the afternoon temperature is in the 40's and the nighttime reading is in the upper 20's or low 30's. Minimum temperatures are nearly always above freezing during cloudy, foggy or rainy weather, thus frost or ice rarely forms on the streets, other than for brief periods following a snow. In the City and immediate vicinity, below freezing temperatures are observed on 15 to 50 days each winter depending upon elevation and distance from the Bay. Minimum temperatures in the residential districts range from 3° to 8° below those observed at the Federal Office Building located in the business district and near the waterfront. The greatest variation in minimum temperatures over the City occurs on clear and calm nights. Occasionally, cold air moving southward across Canada will cross the Rocky and Cascade ranges and reach western Washington. Minimum temperatures under these conditions may range from 10° to 20° and maximum temperatures fail to rise above freezing for a few days. The prevailing direction of the wind in the late fall and winter is from the south or southwest. The highest velocities occur during this season as storm systems from over the ocean move inland.

Precipitation is usually of light or moderate intensity and heavy downpours occur very rarely. Snowfall is light and variable, ranging from 8 to 15 inches depending upon elevation and distance from the Sound. There are winters on record with only a trace of snowfall; while on the other extreme, 21 inches of snow has fallen in 24 hours and the greatest depth on the ground was 29 inches on February 2, 1916. It is not unusual for snow to melt as it falls in the business district and accumulate to a depth of 2 inches or more in the higher residential sections. Snow seldom remains on the ground more than a few days or reaches a depth in excess of 6 to 8 inches. In an easterly direction, rainfall and snowfall increase rapidly in the foothills and higher elevations of the Cascades. Snowfall in the winter ski areas of the Cascades ranges from 300 to 600 inches and the depth from 10 to 20 feet.

*Average precipitation, 1931-1960, 34.10 inches.

Trees for Puget Sound Gardens

NOBLE HOGGSON*

THE original natural conditions in the Puget Sound area are those of a heavily forested region covered with several species of huge evergreens, a scattering of deciduous hardwoods and a dense undergrowth of evergreen and deciduous shrubs. Ground conditions, due to ancient glacial action, originally ranged from heavy clay, through sandy gravel to rich valley loam and almost bottomless peat bogs. In general, except for the acid bogs, the soil is fairly neutral thus making it possible to create in the individual garden almost any degree of acidity desired, and to fill the pH needs of almost any tree.

The climate around Puget Sound is generally mild with relatively little winter frost and generally cool summers. The continuous winter cloud cover and gentle drizzle typical

*One of the best-known landscape architects in Seattle, Mr. Hoggson has been absent from our pages for far too many years.

of forest times has changed to occasionally heavier rains and drier summers. However, the temperatures have remained sufficiently mild to allow a wide latitude of trees which can be successfully grown, from the California redwood to the Norway spruce and from the Southern *Magnolia grandiflora* to the north woods white birch. Though our native forest conifers have given Washington the name "Evergreen State" and contribute as much to our beauty as to our economy, they are not desirable in our city gardens for three reasons: they do not thrive under the ever-increasing menace of smog; they grow too big for the average garden, and, being evergreen, they block out much light during our cloudy winter days.

Many evergreens such as the Lawson cypress are very attractive at an early age and are often planted close to a house, at the corners or flanking the front porch. The home owner does not realize that they are striving to reach their adult size of 150 feet until, after a very few years, he finds he has to tunnel through them to reach his front door. By the same token the purple beech is a very beautiful tree, but it will soon spread to shade the entire back yard. Other trees like the native big leaf maple or Lombardy poplar are surface rooters and will rob the well-sprinkled soil of the entire garden or will crack up paved walks and drives and thoroughly block sewers. So scale or ultimate growth is an important consideration in selecting garden trees and for this reason I have mentioned only the smaller species.

Let us consider trees for Puget Sound gardens for their decorative qualities, such as spring bloom, fall color and special uses. Taking first the spring bloom, there is a large variety of flowering and fruiting trees—apples, crabs, pears, cherries, plums, peaches and apricots—with a large choice of color and habit. White and red hawthorns are effective, as is the mountain ash for both flower and berries. The native dogwood and the eastern white and pink dogwoods give a light shade and the latter do not get too tall. The Goldenchain *(Laburnum)* is very attractive in the spring but its brown seed pods look rather messy later. The Goldenrain tree *(Koelreuteria)* is a fascinating dwarf tree with irregular branches, soft pink new foliage, yellow flowers and Japanese lantern-like seed pods. Everyone knows and loves the many various magnolias, though most of these (except *M. Kobus* and *M. grandiflora)* are classified as shrubs. Other desirable flowering trees of small to medium size are the Snowbells *(Styrax),* the Silverbell *(Halesia)* (fig. 4), pink Locust *(Robinia),* Redbud and Judas tree *(Cercis),* Silktassel tree *(Garrya),* Katsura tree *(Cercidiphyllum),* the Persian *Parrotia* and the Stewartias, all very effective in both habit and bloom and not too big for the average garden.

For summer and fall color there is the Staghorn Sumac *(Rhus),* the very slow growing Sourwood *(Oxydendrum),* the erect Sweet Gum *(Liquidambar),* the light green and globular variegated Box Elder *(Acer Negundo 'Variegatum'),* native Vine maple *(Acer circinatum),* the green or red leaved lacy Japanese maple *(Acer palmatum)* and the Pin and Scarlet oaks *(Quercus palustris* and *Q. coccinea),* both of which eventually grow large but slowly enough to be included in the list. Other non-flowering trees are the white birch, the *Ginkgo* which has unusual foliage, the weeping beech, both green and red forms, and the pyramidal English oak, all of which are most effective in their proper settings.

Among the possible evergreens are the various kinds of holly with green or variegated foliage and red to yellow berries. The Oregon myrtle *(Umbellularia)* and the evergreen Chinquapin *(Castanopsis)* can be trained to tree form as can the Portugal or English laurels which are so often seen as globes or hedges. For accents in more formal plantings the Irish yew, the Umbrella pine *(Sciado-*

→

Silverbell *(Halesia monticola)* and *Rhododendron* 'Unique' flowering in Arboretum, April 28, 1958.

FIG. 4 PHOTO BY: CAMPUS STUDIOS

pitys), the Irish juniper and several croquette-shaped dwarf "Retinosporas" *(Chamaecyparis obtusa* forms) are suitable but not as popular now as formerly. And for oriental effects the Hinoki cypress *(Chamaecyparis obtusa)* and several kinds of bamboo join with the deciduous Japanese maples and flowering cherries as excellent trees for the Japanese type of garden.

I have claimed that many well known trees become too large for our Puget Sound gardens. If the usual home owner rebuilds or moves away within 20-25 years, why worry about how big his trees will get in a full century? The point is, a tree such as a Sequoia, although it lives many centuries, gets its early growth fast and in a relatively few years completely outgrows its setting, especially with our growing use of sprinkler systems in home properties. As we can grow practically anything that thrives north of San Francisco, why not stick to the very many trees available which will stay within bounds? Hardiness, freedom from pests and diseases, color and personal preferences should also be considerations in selecting a tree, but, to me, the most important consideration should be growth habit and scale to its surroundings.

Shrubs for the Puget Sound Region

ELIZABETH BRAZEAU*

THE Puget Sound region is a paradise for gardeners and plant lovers. Because of the moist and temperate climate, the problem is more one of superabundance of plant material than one of under-supply. There are many more fine shrubs, suitable and available, than can ever be accommodated in one planting. The average residential property is limited in size, at least compared to the space that could be readily filled. In this discussion I will have to make some selection from the vast number of excellent possibilities.

To assist in making this choice certain aspects of the landscaping problem can be considered. The first thing we should note is what growing conditions the site offers. Is it sunny or shady, or both? Is the soil sandy and well drained or heavy and boggy? Each type of environment can support an interesting flora but some real attention to the plant's specific requirements will pay dividends. It would be unwise to expect *Arctostaphylos columbiana,* a lovely gray foliaged native sun lover, to flourish in a swamp or in deep shade (figs. 5, 6). This handsome "manzanita" is at home with other Ericaceous plants such as *Rhododendron, Arbutus, Pieris, Pernettya* and *Calluna.* Nor would *Kalmia polifolia,* a small bog dweller with cheery pink flowers in April, be happy or appear believable on a dry western slope. The sunny, lime-loving lilacs with their abundance of bloom in May do nothing to enhance a planting of hybrid rhododendrons which bloom at the same time but have a preference for an acid soil and enjoy the protection of overhanging trees.

On a sunny western bank *Juniperus sabina* 'Tamariscifolia,' *Viburnum Davidii* and *Raphiolepis indica* 'Rosea' form a handsome cover with the tallest material, *Raphiolepis,* placed at the bottom. At the top of the bank, seen against the Viburnum, the fine texture and seasonal color of the low growing Azalea 'White Squall,' a drift of white in April, and *Rhododendron indicum balsaminaeflorum (Azalea rosaeflora),* peachy pink in June, make a pleasing picture. There is a host of good evergreen azaleas, most of them sun loving plants and of course all of them partial to an acid soil. I am still faithful to *Rhododendron mucronatum (Azalea ledifolia)* with its gray green foliage and large white blooms, but the newer Glenn Dale clones 'Everest' and 'Treasure' are favored by many people. They all do well in this area.

Other nice combinations for a sunny bank are *Ceanothus* 'Mountain Haze,' a vibrating blue in early May and a glossy fine leaved

*One of the small number of ladies practicing landscape architecture in the Puget Sound region, Mrs. (Wendell) Brazeau writes from her personal experience during the past ten years in Seattle.

billowing shrub during the rest of the year, planted with pale yellow *Cytisus praecox* or with deciduous azaleas. The Ghent azaleas, 'Altaclarensis' or 'Irene Koster,' or the yellow hose-in-hose 'Narcissiflora,' are especially attractive. The *R. occidentale* hybrids are exquisite in this planting, though this will tolerate more shade than some other species. The many brilliant large flowered Exbury hybrids have been very successful here. They are available in named varieties and are as spectacular in autumn foliage color as in bloom. These in turn can merge into *Photinia glabra* and Mugho pine, or the blue-green fluffy *Juniperus* 'Hetzii' which is lovely with white. On the north side of the *Photinia* or under the edge of overhanging trees *Rhododendron* 'Goldsworth Yellow' is happy with the new small leaved *R.* 'Yellow Hammer' reaching out into the sun. This could move into *R. japonicum (Azalea mollis)* in selected colors and *Azaleodendron* 'Broughtonii Aureum,' generally a rather interesting sprawly plant with corn yellow flowers.

Elaeagnus umbellata, a large shrub to twelve feet or more, is also outstanding in a well drained sunny location. It has medium sized pale green leaves and produces an abundance of silvery green berries that gradually change through orange to deep wine. Branches of this make fine cut material for fall arrangements. The gray foliaged *Cotoneaster* 'Parnayi' does well in the same position, as do all the cotoneasters, and produces large clusters of small reddish-orange berries. It is a good plant in this area but should be allowed ample room to develop, at least eight or nine feet in width with as much height. Another large shrub, attractive with these two, is the deciduous purple leaved Smoke Bush, *Cotinus coggygria* 'Atropurpurea.' Gray foliaged *Senecio laxifolius,* known here as *S. Greyi,* makes an effective color note, and

Bush of *Arctostaphylos columbiana* (in rear) surrounded by *Arctostaphylos nevadensis,* in Woodland Garden, February, 1960.

FIG. 5 PHOTO BY: WHITIE MARTEN

sheets of *Erica vagans* 'Mrs. Maxwell' and 'St. Keverne' complete the scene.

In contrast to these, in a shaded location, the large leaved *Fatsia (Aralia) japonica* produces its conspicuous deep green palmate leaves. This is complemented by the various forms of *Skimmia japonica,* some small leaved, others larger, some red berried, some white. The self-pollinating *Skimmia Reevesiana* carries its own insurance of a berry crop. There is a dwarf staminate *Skimmia* with reddish stems which is as showy and worth growing as the berried plants. *Aucuba japonica,* both the variegated and the green, prosper in the shade. This plant also is dioecious and to insure the handsome green berries so indispensable at Christmas time the pistillate and staminate forms must be planted together. Allowed ample room to grow this plant develops graceful branches of very beautiful glossy leaves. These are especially attractive with *Taxus baccata* 'Repandens,' prostrate English yew, as a foil, and the yew in turn makes a pattern against a ground cover of *Sarcococca Hookeriana humilis* or *Pachysandra terminalis*. The strong foliaged upright *Mahonia Bealei,* with sulphur yellow flowers in February, and *Buxus sempervirens* are a distinctive combination. None of these plants can be seen at their best in hot sunshine where they take on a yellowish unhealthy appearance.

When the abundance of available material becomes overwhelming, the choice can also be narrowed by some consideration of what the plants can do to make life more enjoyable to the people who plant them. We are not too mundane if we expect them to work for us.

Large shrubs can provide shade. English laurel allowed to grow naturally in its loose and open habit and to produce its cherry-like fruit in the summer spreads a leafy canopy. Or the common *Viburnum Opulus*, beautiful in flower and in autumn color, can be used for overhead protection.

Shrubs with thorns will discourage undesirable visitors. No combination of plants can be more beautiful or effective than an informal barrier planting of *Mahonia Aquifolium, Berberis Julianae, B. Darwinii* and *B. triacanthophora*. The textures of their foliage enhance each other, the flower colors are compatible in varying shades of yellow and orange and they like the same conditions. This casual appearing group is most uninviting to would-be intruders.

Where actual trespassing isn't a consideration but some feeling of privacy is, and the space is not large enough for a wide planting, yellow green *Thuja occidentalis* 'Pyramidalis' makes a beautiful living screen. Or *Phyllostachys aurea* can be used to soften a boundary fence.

The choice of plants can also be looked upon as a problem in design. This undoubtedly is not the avid gardener's approach. The gardener is apt to seize upon each plant that appeals to him, and almost every plant does, and worry later about where it fits into the picture. All plants have their design value and can be used to reinforce the composition, taking their places as emphasis or subordinating elements. To carry this point of view to the extreme plants can become almost architectural and by their formal arrangement can carry the lines of the building into the site. Such materials as *Taxus baccata* 'Fastigiata,' *Prunus Laurocerasus Zabeliana, Buxus sempervirens* and the fine foliaged *Ilex crenata* 'Convexa' lend themselves to this treatment. Rounded forms can be contrasted with strong uprights, as the medium leaved *Rhododendron* 'Moonstone' with upright *Enkianthus campanulatus,* or *Daphne odora* opposed by *Nandina domestica*. In my experience *Daphne odora* is an exacting plant, fleeting in its life span, resenting much pruning and contributing its best only in the perfect combination of sunshine and shadow. Regardless of its fastidious nature most gardeners cater willingly to its demands and are rewarded with waxy green foliage and a shower of fragrant pink flowers in February and March. The same complaint can be leveled at *Kalmia latifolia*. It is exacting. But again the reward is well worth the effort.

The scale of the garden must be consid-

ered. In a small area a large specimen of *Magnolia stellata,* perhaps ten feet tall, can seem like a tree and accent a group of pink *Rhododendron ciliatum*. In a larger area *M. Soulangiana* 'Alexandrina' or *M.* 'Alba superba' would be in harmony.

From the opening of the fragile lavender *Rhododendron mucronulatum* and *Hamamelis mollis* with its spidery yellow blooms set off by sheets of vivid ericas in January, the pageant continues.

From spring to summer, the popular forsythias, deutzias, *Philadelphus* and kindred shrubs color the landscape, especially where space is not at a premium.

Summer, though not the foremost blooming season in the shrub world, is enriched by greens as a backdrop for the warm colored perennials and annuals. Such shrubs as the escallonias, abelias, and hydrangeas do make a showing in summer.

Late summer is bright with a display of *Hebe elliptica* 'Autumn Glory' drifting into the callunas 'H. E. Beale' and 'County Wicklow.'

And so into fall, aglow with color of leaves and berries, and back again to January. It is a steady procession of interest and change with the color at times restrained but never absent.

The genus *Rhododendron* is by far the most popular in Western Washington gardens. It provides great variety in size and shape of plant, texture of foliage, time and color of flower. In bloom it is showy beyond description, with colors to suit every preference. The plants are very content in our moist and mellow climate. They are not difficult to grow, but, almost without exception, require good drainage with lots of humus and some protection from strong winds. They respond well to our naturally acid soil.

Both the species and the hybrids do well. Among the smaller leaved species, a welcome relief from the more massive foliage of their larger relatives, are members of the *Triflorum* series. Spring is ushered in by the delicate pale yellow blooms of *R. Keiskei* and *R. lutescens*. The lovely *R. Augustinii* in its best blue forms comes in April. Toward May *R. yunnanense* is a cloud of pink.

Several of the blue Lapponicums are popular for their fine textured foliage and blue flowers. *R. racemosum* does wonderfully in a variety of forms. It is especially attractive because of its small grey green leaves and puffs of pink blossom. *R. Williamsianum* makes a mat of small heart-shaped leaves. Both in flower and bronzy new growth it is superior. It has given these characteristics to many fine offspring, among them the medium sized 'Bowbells,' 'Hummingbird' and 'Moonstone,' pink, red and yellow respectively, the color of each an inheritance from its other parent.

Several small hybrids of varying ancestry are justly popular. The very early *R. praecox* makes a sharp purple note in February and March but is rivaled by the similar but pinker 'Tessa.' 'Cilpinense' follows closely in pale pink bloom and is beautiful growing with the deeper pink *R. racemosum* hybrid 'Racil.'

Among the medium large plants in April the Slocock *R. campylocarpum* crosses always find their place. Their warm cream and apricot tones are welcome. 'Unique' (fig. 4),

The native Western Washington manzanita *(Arctostaphylos columbiana)* flowering in the Arboretum, March, 1958.

FIG. 6 PHOTO BY: WHITIE MARTEN

'Mrs. W. C. Slocock' and 'Souvenir of W. C. Slocock' are among the best.

Several of the large species are outstanding and popular garden plants. They include *R. sutchuenense, R. discolor, R. decorum* and *R. Fortunei.*

May is a blaze of color in the rhododendron world. The species *R. Fortunei* provides many topnotch hybrids at this season. A few that are outstanding are the 'Naomi' clones in different shades of pink and the blush 'Faggeter's Favorite.'

The popular 'Pink Pearl' and the old faithful 'Cynthia' are hard to equal. One pink that does surpass them is 'Dawn's Delight.' This plant in bloom with *Ceanothus papillosus* and banked with pale pink azaleas such

(Continued on Page 54)

Ground Covers

FRANCES KINNE ROBERSON*

A NEW approach to the subject of ground covers would be hard to discover since they have been the basis of so many excellent articles in the ARBORETUM BULLETIN and other publications. But repetition of familiar names may serve a useful purpose in refreshing our memory about old friends and neglected possibilities among the many attractive ground cover plants suitable for various landscape situations.

A ground cover plant may be purely utilitarian to prevent erosion, to protect the roots of other plants from sun, to eliminate the lawn mowing chore, to discourage weeds, or simply to fill up space which does not lend itself to any other type of planting. Or, aesthetic considerations may be prime factors when selecting a ground cover. The effectiveness of landscape design may be increased by ground covers which join various units, or soften harsh lines, or bring a taller planting "down to earth."

Not only do we need to familiarize ourselves with the hardiness, soil requirements and light preferences of plants under consideration so that they may be well grown but we must also be sure that the foliage, flower and fruit—if any—harmonize with other plants and present a pleasing appearance. Color, texture, persistence and size of leaf are important. Color, texture and size, as well as season of flower, warrant consideration.

Material for ground cover use embraces wide choice among (1) herbaceous perennials, both the very low, mat-forming ones and the taller, loose-growing types; (2) shrubs, either deciduous or evergreen, broad-leaved or coniferous; (3) vines; (4) bulbs and corms; (5) annuals and tender perennials; and (6) ferns. Shrubs have the advantage of greater permanence and are by no means lacking in variety. Perennials would be almost equally diverse and useful.

Azaleas, gaultherias, dwarf rhododendrons, huckleberries and related plants are particularly adapted to use with large rhododendrons.

Any of the varieties of *Andromeda polifolia* will hang out soft pink bells on twiggy stems a few inches to a foot above the mats of intertwined roots in April. Moist but well-drained peat suits them best. The dark green leaved variety, *A. p. montana,* vies with the gray leaved one, *A. p. 'Nana Compacta,'* in popularity. Propagation is usually by division but may be by cuttings or seeds.

A close relative, sometimes listed as *Pieris* or *Andromeda nana,* is *Arcterica nana,* a veritable pygmy of only three or four inches in height with fragrant cream-colored flowers in drooping clusters. Rooted portions may be detached to establish new plants. Cuttings root easily also.

The double salmon flowers of *Rhododendron indicum* var. *balsaminaeflorum (Azalea rosaeflora)* seem to smother the low compact bushes of bronzed hairy leaves when at their best. The flower color varies slightly with soil

*One of our most valued contributors and formerly a member of the Editorial Board, Mrs. (L. N.) Roberson reviews in practical fashion some of the plants used here as ground covers.

conditions so that care should be exercised in using this plant or its single-flowered counterpart, 'Flame Creeper,' as a ground cover below shrubs which bloom at the same season. The low branches often layer themselves in peaty soil under the plants.

Any azaleas of low habit, such as 'Hinodegiri' or 'Gumpo' if used in sufficient mass to be in proper scale, may be considered ground covers. Year-round appearance of the foliage increases in importance if the planting occupies a conspicuous place in the garden. The prodigal display of bloom lasts such a short time in comparison with the perpetual show of the foliage that the latter becomes especially important.

Heathers assume a prominent place in any list of ground covers for the northwest. A good all-year appearance is a virtue of many low growing ones. A sequence of winter bloom which embraces several months is possible with *Erica carnea* and its varieties. *E. c.* 'King George' usually opens its rosy-mauve flowers in December when they literally cover the somewhat rounded mats of bright green foliage. Flatter mats characterize succeeding groups: *E. carnea* itself with clearer rose flowers in January, 'Springwood' with lighter green foliage and snowy flowers, then 'Springwood Pink' whose pink buds take on a rosier hue as they open, and, lastly, 'Vivellii' or 'Ruby Glow' with bronze tints to the foliage and crimson flowers. In addition to these winter heaths a long list of summer flowering heaths for ground covers might be compiled from reference sources readily available. Suffice it to say here that the range of flower color and form, as well as foliage texture and plant habit, extends to distracting variations. Generally speaking successful culture of heathers is achieved with sunny exposure. peaty soil and moderate moisture.

The genus *Gaultheria* offers a large number of excellent ground covers for moist, partially shaded situations. One of the best known, *G. procumbens,* Wintergreen, is a native of the eastern United States, has handsome burnished oval leaves of more than an inch in length and bears scarlet fruit. Two northwestern natives, *G. humifusa* and *G. ovatifolia,* also have scarlet berries. These appear as miniature forms of Salal. The rounded, bristly-edged leaves of *G. nummularioides* vary in color from old rose when newly unfurled to bronze when mature. The prostrate stems mold themselves to the contour of the ground, each one controlling its string of coin shaped leaves. Two white-berried Asiatics are *G. cuneata* and *G. Miqueliana.* Customary propagation of gaultherias is by cuttings in spring but of course they may be grown from seeds.

The huckleberry tribe provides us with one of the most adaptable of broad-leaved evergreen ground covers, *Vaccinium Vitis-idaea,* known as Lingenberry when its tart red fruit is sold commercially for jam or for pie filling. Creeping stems enable these plants to cover densely an area in which they have been spaced some distance apart.

These two small-leaved treasures are certainly of ground cover value if it is possible to establish their creeping mats in sufficient quantity to serve such a purpose; *Empetrum nigrum* (Crowberry) noted for its blue-black fruit, and *Loiseleuria procumbens* (Alpine Azalea) at its best when the foliage is practically obscured by small flowers of pink or of white tinged pink. Moist, well-drained peaty soil suits either plant.

Pernettya offers a wide range of sizes and some choice in color of berry. The tangled two-foot-high thickets of *Pernettya mucronata* will serve a double purpose when used as a ground cover in an exposed area where it will also discourage trespassing because of its prickly leaves. *P. leucocarpa,* on the other hand, requires a more secluded area where it will create a miniature thicket of only a few inches in height. An interesting natural cross between *Gaultheria* and *Pernettya* is *Gaulthettya wisleyensis.*

Rhododendron pemakoense, from one to two feet in height, covers well because of its stoloniferous runners. The mauve flowers are more than an inch across but may suffer from frost unless the plants are located in a protected spot. *R. radicans* is much lower to the

ground, has narrower dark green leaves and purple flowers. The stems may root readily by self-layering but they do not travel underground. These and other dwarf rhododendrons such as *R. keleticum, R. racemosum, R. Williamsianum* and a host of others will usually stand considerable sun but need plenty of peat moss in the soil and should never dry out around the roots.

Dry banks demand an entirely different type of plant, chief examples of which are brooms, sun roses and rock roses *(Cistus)*. The brooms vary in height from the prostrate *Genista sagittalis,* called arrow broom because of its three-angled stems, to *Cytisus praecox* 'Moonlight' of several feet in height unless pruned unmercifully. Intermediate ones include *C. purpureus* with its gracefully arching branches of a foot or so in height; *C. versicolor,* of two to four feet, with a creamy flower which fades to purple; procumbent *Genista pilosa* with yellow flowers, and *G. radiata* which makes an enormous rounded shrub whose soft-tipped shoots belie their barbed appearance. Cuttings of brooms taken in May root easily but young plants should be kept potted until set in their permanent site since the roots would otherwise wander and suffer in transplanting. Poor soil is no deterrent to growth of any of these plants.

Another legume adaptable to poor soil conditions is *Lotus corniculatus,* bird's foot trefoil, a yellow-flowered perennial forming bright green mats in summer but dying back to ground level in winter. Its intertwined roots increase the nitrogen content of the soil while preventing erosion.

Sunny areas where a little better but not rich soil prevails will take on an interesting appearance if covered with flat shrubs such as *Arctostaphylos Uva-ursi* (Bearberry or Kinnikinnick), *Cotoneaster humifusa,* or *Ceanothus prostratus*. These three shrubs may even be combined in large drifts. The first two would flower in spring and have red fruits in autumn. The powder blue flowers of *C. prostratus* would enliven the setting in early summer.

Old friends, among plants as among people, are often best. Shady tracts planted with *Vinca minor, Hypericum calycinum, Pachysandra terminalis, Ajuga reptans* 'Rubra' or *A. genevensis* (green-leaved) please the eye and serve their landscape purpose better than a spotty conglomeration of diverse or difficult subjects.

A special effect may be created by using white-flowered plants such as *Asperula odorata, Epimedium niveum* or *Omphalodes verna* 'Alba.' The dappled shade of woodland glades is a proper setting for *Campanula Poscharskyana, Corydalis lutea, Oxalis oregana, Primula Sieboldii* and other perennials. Each species should be planted in an impressive quantity to give a ground cover effect.

Paths and paved areas need plants adaptable to foot traffic without suffering harm. In addition to *Thymus serpyllum* and *Sagina subulata* for this purpose there is an interesting representative of the *Rosaceae, Acaena glauca,* for sunny walks. More unusual but useful additions to this list would be *Bellium minutum, Gentiana acaulis, Dianthus graniticus, Pimelea coarctata, Raoulia australis, Silene acaulis* and *Veronica repens. Acaena microphylla, Arenaria balearica, Cotula squalida* and *Mentha Requienii* serve the same purpose in shade.

The selection of the proper ground cover for a certain location is complicated more by the wealth than by the dearth of material from which to choose. Reference to books, magazine articles and catalogues, coupled with personal observation and ingenuity, will reward any gardener with satisfying effects.

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Shrubby Penstemons in the Arboretum

JEAN WITT*

THE shrubby Penstemon display garden in the rock garden at the south end of the Arboretum is now in its third year, and some of the 1959 and 1960 plantings are large enough to make a considerable color display.

This garden is sponsored by the American Penstemon Society, and most of the plants have been donated by northwest members. Mr. Roy Davidson has been particularly active in searching for new and interesting forms and hybrids in the wild. The garden is cared for by members of the "Mountaineers" Arboretum Unit No. 32, who have kept it weeded faithfully. Mr. Julius Nelson, Arboretum employee who lives in the stone cottage, has also taken a personal interest in its welfare, doubtlessly because of the improvement in the weed patch which formerly occupied his front yard view.

The purpose of the garden is twofold; first, to acquaint the public with a valuable native rock garden plant by providing a colorful display of shrubby penstemons, and second, to test as wide a collection of material as possible under garden conditions with a view to selecting superior clones for naming and introduction.

About 100 plants were put out during the first year, and perhaps 75 since. They represent between 50 and 60 clonal variations. All eight species of the *Dasanthera* section are represented in from one to several variations of flower color and leaf form. (For complete descriptions of the species see *Arboretum Bulletin* Vol. 21, No. 1, Spring 1958.) They vary in size from tiny leaved prostrate types of *P. Davidsonii* to large loose mounds of *P. fruticosus* a foot high and a yard across. Most are lavender, orchid, or purple flowered, but pink and white flowered forms occur in several species. *P. rupicola* and *P. Newberryi* contribute rose to carmine-red hues. The collection also includes a number of hybrids, as hybridization among the species is quite common both in the wild and in gardens. From a garden standpoint, some of the most attractive plants are appearing among these hybrids.

Besides this wide range of flower colors, the shrubby penstemons are notable for their many interesting leaf forms. *P. Davidsonii* with shiny little ping-pong paddles, gray-leaved *P. rupicola,* and holly-leaved *P. fruticosus* ssp. *serratus* are just a few of the types which have ground cover value entirely apart from their flowers. Some of the plants were collected specifically for their attractive foliage.

A few species of shrubby habit from sections other than *Dasanthera* have been included in the plantings, such as *P. coloradoensis* and *P. pinifolius*. Some non-shrubby species are also represented, among them *P. procerus* and *P. venustus,* which are good rock garden subjects.

On the first of May this year, only the plantings of *P. fruticosus* were in full bloom. This promises to be one of the showier species, partly because of the large size of the flower stalks, and partly because it is located to advantage on the upper part of the rockery. The prostrate species occupy positions on the lower parts of the rockery, and at the base of the rock work; since some of these are among the most recently planted items. they have not made as good growth as the *P. fruticosus,* though many are well budded.

Here are a few of the plants in the collection that already have been noted as outstanding:

"Charming", an excellent pink selection of *P. fruticosus,* obtained from Lamb's Nursery in Spokane, Washington. This is about 12 to 15 inches tall, with very full flower stalks.

"John Bacher", a very vigorous and floriferous white flowered selection of *P. Cardwellii,* named for the Oregon plantsman who collected it.

"X Edithae", with vibrant red-violet buds

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*A member of the American Penstemon Society, Mrs. (J. A.) Witt has been especially interested in the shrubby types for years.

New or Unusual Plants in the Arboretum

10. *Pterostyrax hispida*

J. A. Witt

On rereading the previous articles in this series one notices that nearly one third deals with members of the Storax family *(Styracaceae)*. It is not that the Arboretum has an especially large or unusual collection of this family, but rather that so many members are such excellent garden subjects.

The Epaulette tree, *Pterostyrax hispida,* is one of the larger members of the Storax family, since it may reach a height of some forty-five or more feet, with a spreading crown of ascending slender branches which gives it a pleasing winter outline. The leaves are not as attractive as in certain other of its relatives, in fact, they might be called coarse. Large, up to seven or eight inches long, with an oblong or obovate shape, grayish-green and covered with stellate hairs, they give a dense shade and tend, somewhat, to obscure the flowers which appear in June. Fortunately, the panicles of flowers are large enough to override the dominant foliage, particularly when the tree carries a good crop of blooms. The name, Epaulette tree, describes with accuracy unusual in common names the appearance of the *Pterostyrax* when in full flower; a tree covered with creamy white pendent tassels reminiscent of the fringes on the shoulder boards of military dress uniforms. The similarity is even greater when one looks at the individual flower. The five petals are small and narrow and enclose a cluster of ten longer white stamens. These in turn are arranged on lateral branches from the main rachis of the inflor-

escence and closely mimic the epaulette (see cover illustration).

The fruits are small fuzzy cylinders arranged, as were the flowers, in drooping stalks (fig. 7). They hang on long after the leaves have fallen in the fall and make the tree a thing of beauty, especially when the low winter sun illuminates the pendent clusters.

The Arboretum's trees, located along the Broadmoor fence south of Rhododendron Glen, have made excellent growth since they were planted in late 1950. They were received as seeds from the Botanic Garden, Nikko, Japan, in 1948. By June 1956 they were twelve feet high; three years later, June 1959, they were eighteen to twenty feet, and now, May 1962, are 22-24 feet tall. They first flowered in June 1956, and have been flowering very well since, usually during the first half of June.

Pterostyrax hispida is native to Japan and to western China, home of so many fine *Styracaceae*. There are two plants of an interesting relative, *Pterostyrax corymbosa,* growing in the open areas west of the Epaulette tree group; young trees now ten feet tall and not yet to flowering age, they have a somewhat different leaf and are native to Japan and southeastern China.

The Epaulette tree seems to be of easy culture, no particular difficulties appear to bother it, although it might be best to use it as a specimen tree. We have noticed that when it is grown under larger trees there is a tendency for its branches to die back. If it can be placed in the open where the sun can backlight the fruit in November and December it will be a joy both then and when in flower in June.

What to See in the Arboretum

July - August - September

THE summer months are quiet months of growth for most of the Arboretum's plants. Flowering trees and shrubs are at a minimum, as if nature was resting from its burst of spring bloom and the fruits of these blooms were waiting for fall harvest. We are not without flowers, however, for there are some laggards among our trees and shrubs to keep up floral interest through the third quarter of the year.

The Rhododendrons are still active, at least a few of them. The bright orange-red 'Azor' group near the head of Rhododendron Glen is usually still in flower to greet July and the beautiful white lily-like bloom of *R. auriculatum* often waits until early August to perfume the air. These you will find in the Prentice Memorial and below the lookout in Rhododendron Glen. Along Azalea Way, west of the picnic area, another fragrant group of Rhododendrons flowers in early July. *Rhododendron viscosum,* the swamp azalea, and *R. arborescens,* the sweet azalea, save their white and pink flowers for our enjoyment nearly a month after the peak azalea bloom.

A trip to Rhododendron Glen and the adjacent camellia collection is always worthwhile in July, if only to see the magnificent *Magnolia macrophylla* in flower. Our finest specimen is growing here and one can expect to see the huge white flowers set off by truly enormous leaves during the early part of that month. The trail along the south bank of the glen is not without interest, particularly if one notices the shrubby *Hoheria glabrata,* a New Zealand native with hollyhock-like leaves and clusters of white flowers reminiscent of cherry blossoms. The stuartias, camellia relatives from Japan, Korea and south-eastern United States, will often be flowering in early July. Look for their white flowers among the camellia collection, and notice the beautiful habit of the older plants, especially *Stuartia pseudo-camellia.*

One of our more exotic appearing trees flowers in late July or early August. *Albizzia Julibrissin* var. *rosea,* the hardy silk-tree, has

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Fruits of *Pterostyrax hispida,* November, 1957.
FIG. 7 PHOTO BY: WHITIE MARTEN

a very finely divided leaf which is surmounted by pink powder-puffs. We find it grows well in the hot dry soil of the cistus collection, where several trees are planted along the northern edge.

August will see the honey scented white flowers on the Chilian *Eucryphia glutinosa,* growing between the holly collection and the lookout. The Hydrangea collection is certainly worth visiting, not for the large "hortense" forms alone, but for the spectacular species growing behind them. *Hydrangea aspera* in its several varieties has flowers of a striking lavender-blue and leaves which appear to be made of green velvet. Several other shrubs with flowers in blue shades are of interest in August; *Ceanothus* 'Gloire de Versailles' near the parking lot opposite the magnolia collection has pale blue flowers all summer long, while south of the greenhouse the chaste tree, *Vitex agnus-castus,* produces spikes of brilliant violet-blue, and *Caryopteris* x *clandonensis* has flowers of a paler, softer blue late in the month.

September sees the second flowering of our native dogwood, *Cornus Nuttallii,* found throughout the Arboretum; the whites, pinks and mauves of the autumn crocus, *Colchicum* species and varieties, in Loderi Valley and around the office, and the start of the fall color display that will reach its climax in late October.

J. A. W.

The Yew Tree

LONG AGO, when we were first clearing our garden of undesirable growths, we came upon a fairly small tree of yew no taller than I. It was generously peppered with small, exquisite pink "berries," open at the top so the seeds could easily escape. I was astonished and began to look for another tree—I had always understood the yew was dioecious—but there was no other yew tree in the vicinity that I could find. Its branches were nicely proportioned, some of the low ones sweeping the ground. It was growing in deep, deep shade. The dark green needles were ranked in two rows, each somewhat twisted at the base, forming a tiny stalk, a distinctive feature of the yew.

I had often seen another variety of yew in Victoria, B. C., in a topiary garden. To come upon a tree in one's own garden that is seldom found in the wild, was astonishing.

We cleared away the ever-present wild blackberry vines and, to retain the deep shadows the yew loves, planted a redwood tree to add to the shade which the Douglas firs were already furnishing. For a ground cover I planted dark, shadowy, purple-red Lenten roses *(Helleborus orientalis)* along a nearby path.

The yew looks for all the world like a conifer but it does not produce cones. The habit of growing "berries" instead of cones is curious but distinctive to the yew. The stems and trunk of an old yew are very fine grained and exceptionally durable wood, "outlasting iron." For centuries it was used in Europe for bows and the early American Indians knew its value for the same purposes. The colors of the wood make it instantly recognizable; the orange tints are peculiar to the yew. It is now frequently used for tool handles.

The yew tree is found over a large area of Europe, through Portugal and Spain, from the Mediterranean to Scotland and Ireland. It is also found in Algeria and West Asia. Once it grew in Scandinavia but for some reason has disappeared. There are many yews found in deep shade in Mt. Rainier National Park. It is called an "under-story" tree.

The European yew *(Taxus baccata)* has a poisonous sap fatal to cattle and all grazing animals. Thousands of cattle have been killed in England alone from eating the leaves of low-growing, easily reached foliage of the yew tree. Caesar, as well as Virgil and Livy, mention the danger of yew to grazing animals. The American species, *Taxus canadensis* and *T. brevifolia,* are somewhat less toxic but still dangerous. The latter grows along the western coast of the United States, from California to Alaska, as well as in the

(Continued on Page 57)

Some of Our Favorites

* * *

Helleborus corsicus

FOR year-round landscaping effect and for winter flower arranging there is no more satisfactory plant to my mind than *Helleborus corsicus*. A handsome perennial, native of the island of Corsica, it grows under cultivation to a height of 2 to 2½ feet and covers a space of about 2 by 2 feet. It makes an excellent effect as a low hedge or foundation planting, although reasonable protection from heavy wind might be advisable. The striking pale green foliage grows alternately on thick, somewhat reddish, unbranched stems. Leaves are trilobed and the leaflets lance-shaped and sharply serrated. They are evergreen and persist until the new growths appear in April, at which time they should be removed to the ground to make way for the new. Thus a twelve-month landscape effect is achieved.

The flowers which grow above the leaves in terminal clusters on every stalk are of a delightful light green color and firm texture. Their open, saucer-like appearance, with brighter green carpels and yellow stamens, is extremely appealing. In fact the inflorescence of a single stalk, cut with several leaves below, is a bouquet in itself, and on a winter's day an especial delight. Blossoms begin appearing about holiday time and persist until time to cut down to allow the new growth a chance to develop. Used in a flower arrangement, it is advisable to slit the stem and immerse completely in cool water for an hour. When wilting does start they can be revived by freshly cutting the stem end, plunging deeply into hot water for ten minutes and then immersing in ice water. This treatment will often provide a week or more of usefulness.

Culture is easy. It grows in almost any type of soil, although somewhat more lushly in rich, moist loam. It does well in sandier soil if kept watered, and will grow well in clay. What more could one ask? Once established, it is advisable not to transplant. Division seems never to be essential to good performance. I seldom, if ever, use fertilizer. Propagation is by seeds, which should be planted when ripe, not held in storage. This necessitates leaving one or two stalks at the time of the annual cut-back as seed needs longer to ripen. In the writer's experience there seem to be no pests to bother about. so that all in all, this is a "must" plant for any garden.

HELEN DE FOREST

Arbutus Unedo

ARBUTUS UNEDO (Strawberry Tree) is a shrub or small tree of unusual charm. It has smooth, reddish trunk and stems, and shining green leaves. Late in the fall and early winter when most plants have no leaves, flowers or fruits, *Arbutus Unedo* has all three!

Its native habitat is southern and western Europe, including Ireland in the region near Killarney. It likes hillside planting for good drainage and requires little summer watering.

It is often recommended for seaside plantings. Its drooping racemes of ivory, urn-shaped flowers appear in September and continue through the winter. The fruits are orange-red, about three-quarters of an inch in diameter and resemble strawberries in appearance, hence the common name, "Strawberry Tree."

It is propagated most readily by seeds since cuttings root slowly if they root at all.

The ideal planting is a group of three or more. It is said that if each plant is from seeds of a different parent the resultant number of fruits is greater than if the seeds are from the same tree.

To give the feeling that there is personality in trees, I think that this one dislikes a sophisticated setting such as might be had with large flowered rhododendrons. Rather, it would be happier with its own kind, relying on its own charm to endear itself to beholders!

SALLY BUNGE

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T. C. Frye
(1869 to 1962)

A WHOLE generation of students brought up in the public schools and colleges of the Pacific Northwest will always associate the names of Frye and Rigg with their training in botany and the natural history of plants. Nearly every botany class was stocked with the manual on local flora written by these two men. Though the book's formal name was "Elementary Flora of the Northwest", it was more often known as the "Frye & Rigg." Within the past year both bearers of these well-known names have passed away. Dr. George B. Rigg died July 10, 1961 and now we honor Dr. Theodore Christian Frye who passed away on April 5 of this year.

Longevity is axiomatic among botanists and these two pioneers of Northwest botany were no exceptions; both lived a full four score and ten years. Dr. Frye's long botanical career at the University of Washington began in 1903 and continued, despite formal retirement in 1947, until the time of his death. To his colleagues here and throughout the world he was known best for his continuous and productive work on bryophytes. He contributed copiously to furthering knowledge of the rich moss and liverwort flora of the Northwest; the two-volume work on the *Hepaticae of North America,* which he co-authored with one of his students, Dr. Lois Clark, is the most outstanding result of his lifelong interest in the little known but intriguing group, the liverworts.

Those hundreds of high school and college students of years past, though, will most readily link the name of Frye to his books on plant life of our area. In addition to the highly popular and oft-reprinted *Elementary Flora,* Dr. Frye gave his public *The Ferns of Washington* and, with Dr. Rigg, *The Northwest Flora.*

Beyond the name of Frye on a book cover, is the man who gave so freely of his time and energies to the burgeoning groups of students who partook of the gifts of the goddess Flora under Dr. Frye's tutelage year after year.

This amiable and generous gentleman with twinkling eye and sly smile unstintingly gave of himself time and unselfish effort on behalf of his students—time for botanical knowledge and time to counsel students in their personal affairs.

To tell of Dr. Frye as a teacher, an eminent bryologist, and a warm and human person is only to describe part of the total person. As Director of the marine biological laboratory at Friday Harbor, he helped guide a tiny summer outpost of the University into attaining international recognition as a center for research and instruction in marine botany, zoology and oceanography. In the several years before his retirement Dr. Frye also continued to serve as the chairman of the Department of Botany. His shoulders were broad and he carried the administrative load well.

To old friends of the Arboretum the name Frye means much more than the prodigious botanical accomplishments sketched in the above paragraphs. Dr. and Mrs. Frye were green thumb botanists in those days when most of western Washington was still recovering from the shock of early logging. They brought sophisticated gardening into many lives through their direct and indirect contributions to Northwest horticulture. The most direct influence of the Fryes on our regional gardening practices has been through the efforts *a la* pen and trowel of Mrs. Else Frye, the professor's wife. Yet Dr. Frye's relations with the Arboretum were indeed direct and providential at a time when the Arboretum was just an infant. Dr. Frye served on the Arboretum Committee under Dean Hugo Winkenwerder, and then on the present Arboretum Board under Dean Gordon Marckworth. During his tenure as committee member he served on the Planning Committee where one notes his periodic contribution to the fledgling arboretum as reported in the early minutes. Upon retirement in 1947 Dr. Frye was replaced by Professor C. Frank Brockman.

My most vivid personal recollection of Dr. Frye has an arboretum-like setting. One spring day in the garden that he and Mrs. Frye created to be "at one" with Nature, I encountered the professor at work. Already in his eighties, he was slowly but surely inching a huge boulder out of the creek. The patience of a younger man would surely have been tried at the snail's pace of the operation. But to Dr. Frye, the pace of the task had to be adjusted to his physical capacity. He had long since learned to fit the task to the man and he was thoroughly enjoying the application of his own strategy to the immobile object. He had contrived to couple with his zest for life a temperance in action that surely contributed to his long years of service to the University and to the community.

A. R. K.

The Oliver B. Thorgrimson Cup

Four entries were received in the first competition for this trophy, from Units Nos. 25, 32, 41 and 58.

The judging committee consisted of three members of the Unit Council, two from Unit No. 49, which presented the cup, with the executive secretary of the Arboretum Foundation and the director of the Arboretum.

It was evident from the reports submitted that all these units had given 50 or more hours of work in the Arboretum, either weeding, as hostesses in the Japanese garden, or in the office. The majority had also raised funds by various means and sent them to the Arboretum for some specific purpose, i.e., the library or a new piece of equipment.

The committee unanimously agreed that the cup should be awarded for 1961 to the Overalls Unit No. 25, having fifteen active members, which contributed 125 hours of work to packet and dispatch 2,560 packets of seeds sent out in the annual spring seed exchange with 145 other similar institutions, thus taking a heavy burden off the small Arboretum staff.

The members also donated $110 for a liquid fertilizer dispenser, raised additional funds by a bazaar and other means and participated in Work-and-Fun Day and in the fall plant sale.

Unit No. 32, the Mountaineers, also deserves special commendation for their varied and considerable accomplishments during the year on behalf of the Arboretum.

This is your Arboretum, kept alive by your support

We are pleased to welcome the following new members (March 12 through June 8, 1962): *Sponsor*—Wyman Youth Trust. *Contributing*—Arthur Heisdorf, Mrs. R. Albert Osborne. *Sustaining*—Mrs. Dorothy Betcher, Mrs. Ted L. Jamieson, Mrs. C. S. Mason, Mrs. Kiyo Motoda, Lyle Noland, M. Otani, Mr. and Mrs. Fred J. Souder, Mrs. Charles Winkelman, Eastgate Garden Club No. 1. *Annual*—Mrs. Albert H. Adams, Mrs. Bernard Allison, Mrs. S. P. Avann, Mrs. Albert E. Baab, Mrs. Wm. H. Banks, Mrs. Ben Bergsma, Mr. and Mrs. Fred W. Brockman, Mrs. R. L. Burgner, Mrs. Phillip A. Carlson, Mrs. Vernon W. Chester. Mrs. Morris E. Childs, Mrs. Norman Clark, Mrs. Ellis B. Cook, Mrs. Robert W. Dancer, Mrs. Melvin De Weerd, Mrs. John T. Elder, Mrs. A. W. Fairhall, Mrs. Leonard Gamblin, Mrs. B. Jackson Glidewell, Mrs. Vernon E. Godsey, Mrs. Wm. Hanot, Mrs. Wm. A. Hollenbeck, Mrs. Arnold S. Iverson, Mr. and Mrs. Wm. L. Jackson, Mrs. Warren O. King, Anton C. Kirchhof, M.D., Mrs. L. B. Kiriluk, Mrs. Neil Malarkey, Jr., Mrs. Alex E. McCallum, Mrs. Wesley Melville, Mrs. James B. Morrison, Mrs. Dagobert Muller, Donald G. Palmer, Mrs. Margaret K. Parker, Mrs. Jay N. Paulson, Mrs. F. J. Pelk, Birger T. Peterson, Drury A. Pifer, Mrs. Thorburn R. Rieben, Mrs. A. H. Sargent, Mrs. Michael J. Scott, Mrs. Hector Sepulveda, Mrs. David L. Servies, Mrs. H. L. Sibley, David P. Siegley, Mrs. E. T. Sleem, Mrs. O. A. Spaberg, Mrs. P. R. Stafne, Mrs. Charles H. Starkovich, Mrs. C. H. Steele, Mrs. Wm. F. Steyh, Mrs. R. Taggart, Mrs. Ralph Teig, Mrs. Wm. R. Tiffany, Mrs. O. M. Torbenson, Mrs. Paul J. Waibler, Mrs. Robert E. Wegner, Mrs. G. F. Wenzell, Mrs. Lee Weston, Mrs. John J. Wheatley, Mrs. J. C. Wittmann, Mrs. Wayne Wright.

We are also most grateful to the following members who have raised their dues to: *Contributing*—Mr. and Mrs. Philip G. Johnson, Mrs. R. E. Lang. *Sustaining*—Mrs. Wm. M. Culliton, Mrs. Hawthorne K. Dent, Mrs. Frank W. Dyer, Mr. Edw. I. Garrett, Mrs. Charles Hayter, Mrs. John M. Maki, Alan Rogers, Mrs. C. Twitchell.

Shrubby Penstemons In The Arboretum

(Continued from Page 47)

and flowers, a hybrid *(P. rupicola x P. Barrettiae)* developed by Carl English of Seattle and named for his wife; described in *Nat. Hort. Mag.,* XXVI, (2), 105-108, (April 1947).

P. rupicola alba, a mat former with distinctive apple green leaves and white flowers.

A *P. Newberryi* form with red-edged, red-notched leaves, and almost red flowers.

A *P. fruticosus-P. rupicola* hybrid which covers itself with masses of rose-pink flowers on 4- to 6-inch stems. This is seen at its best in a large clump under the big Douglas fir just west of the office, and is scheduled to be named and registered. Another *P. fruticosus* hybrid with rich violet flowers was noted among the plants under number.

As the more recently planted smaller things come into bloom it is expected that other outstanding clones worthy of introduction will appear among them.

Shrubs for the Puget Sound Region

(Continued from Page 44)

as 'Pinkie Pearce' and the sharp color of a 'Hexe' type is an arresting sight.

The very large *R. Loderi* plants, though they must attain their full size before the huge blooms are in pleasing proportion to the scale of the plant, are a magnificent sight. 'Venus' and 'King George' are two striking examples.

There are many fine reds, 'Jean Marie de Montague,' 'Unknown Warrior,' 'Elizabeth' and 'Britannia' among them. The brilliant *R. Griersonianum* hybrids such as 'Azor,' 'Fabia,' 'Vulcan' and 'Mrs. Donald Graham' bring the season to a close in June.

There are many other first class garden hybrids, with or without the blessing of the four star rating. 'Dr. Stocker,' 'Butterfly,' 'Mrs. A. T. de la Mare,' 'Princess Elizabeth,' 'Blue Peter,' 'Purple Splendour' and 'Albatross' are some of the favorites.

It is frustrating to do so little justice to a genus of such magnitude but since this article purports to deal with all the shrubs being grown in gardens in the Puget Sound

region, this sketchy resume will have to suffice.

It would be hard to say enough of the many gorgeous camellias that do so well in our gardens. The more open loose growing varieties such as 'Grandiflora Rosea,' 'Finlandia,' 'Auburn White,' the *'Williamsii'* hybrids and all the *Sasanqua* forms are easier to relate to other plants than the monumental types such as 'Debutante.'

Some of the most valuable shrubs in our gardens are natives of the area. Collected plants of *Rhododendron macrophyllum,* the Washington State flower, which is a great tourist attraction when it blooms through the woodlands on the Olympic Peninsula in May, is a welcome sight in any woodland garden. The tall *Mahonia Aquifolium* and lower *M. nervosa* are excellent plants. *Gaultheria Shallon* and *Vaccinium ovatum* with the deciduous *Vaccinium parvifolium* grow beautifully in the company of other Ericaceous plants. *Pachistima myrsinites* adds its interesting fine foliage. *Arctostaphylos columbiana* and *A. Uva-ursi* are much used and their hybrid *A. intermedia,* which at times resembles one parent and at times the other.

Compared to the myriad of valuable shrubs available here and amenable to our garden conditions, I have mentioned relatively few. The materials I have discussed I have used many times in plantings in the area over a period of ten years and I know they are good garden performers. There are many other plants that I would like to include. The list of new named hybrid azaleas would be well worth a lot of attention. They would no doubt do as well as the older well known varieties. Great strides have been made in camellias with much hybridizing in the species *C. saluenensis, C. japonica* and *C. Sasanqua.* It would be difficult to keep abreast of the new developments in rhododendrons.

In time these new materials will supplant some of the old. So the hybridizer and nurseryman work together to provide all that is good and the eager gardener's problem of choice is intensified.

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BOOK REVIEWS

Modern Trees, by E. H. M. Cox and P. A. Cox (Thomas Nelson & Sons, Ltd., London, 1961). Price 25 shillings ($3.40).

MODERN TREES is the third volume published in a series of books by the Coxs, father and son, dealing with woody plants for modern gardens.

The latest addition retains the same high standards as did the other two, and the trilogy should be one of the most useful sets available to the amateur gardener.

Although written for English and Scottish gardens, the authors have traveled extensively in the Pacific Northwest and much of what they recommend can be adapted to our uses here. Perhaps the volume would not be so helpful to other sections of the country, particularly where the climate is less equable than ours.

The text is divided into two sections,—an introduction which contains much good information on propagation and culture, and the main section which lists the trees in alphabetical order. This portion is again divided into two parts; one on conifers and the second on trees other than conifers.

One may always find fault with authors who make up lists of this sort choosing one tree over another, but the Coxs have done an amazing job of selecting their trees. The only place where one might disagree with them is in their selections of trees which have many cultivars such as the crabapples or ornamental cherries. Here the differences of opinion lie more in the commonly grown varieties. I, for instance, have never seen *Malus* 'Lady Northcliffe' and the Coxs seem unacquainted with *M.* 'Blanche Ames', a very fine American crabapple introduction.

Each species or variety is described briefly but well in non-technical vocabulary, usually from first-hand experiences. There is always a word or two about propagation and somewhat more on cultivation, site, and landscape use in each paragraph.

A final chapter deals with trees for wind protection which might well be read by those planning a garden along the shore or in the windy valleys of central Washington. There is also a series of lists of "Trees for Various Situations" but these are neither as good nor as complete as those in other similar works.

There are twenty-three adequate line drawings and four most handsome color plates that could do honors to *The Botanical Magazine.*

If you love ornamental trees this book should be in your library. J. A. W.

Ornamental Shrubs of California, by Leonid Enari (Ward Ritchie Press, Los Angeles, Calif., 1962). Price $5.95.

THIS is a disappointing book in several respects—at least to this reviewer. The Arboretum cooperated to a small extent with Dr. Enari by sending specimens of a number of species to him for study and we had expected something a little more comprehensive to be the end product. There are 277 shrubs identified and keyed out which seems a goodly lot at first glance but which actually gives very sketchy coverage. Azaleas and rhododendrons which do so well on the coast from San Francisco northward are dismissed with a short paragraph stating they are too difficult except for specialists, and the lovely shrubby penstemons native to California are not even mentioned.

Then too, we expect a little horticultural information with a book of this type, a mention of growing conditions if nothing else, and feel that it is an oversight to omit this material.

Despite this criticism, the book serves its function admirably. It was designed as a means of identification to the more common ornamental shrubs of California and Dr. Enari has developed a most ingenious key to help the amateur do this. The key is forty-five pages in length and is, at least for someone with a little working knowledge of botanical terms, quite simple to use and nearly foolproof, provided one is working with a shrub included in the book. There are also 181 line drawings, mostly of leaf material, which should prove useful to those not familiar with the plants.

There is a brief and accurate description of each shrub mentioned so one may easily check their determinations once they are made.

Despite the fact that this is a book written specifically for California, over half of the species in it will grow in the Pacific Northwest so its usefulness is not limited to one state. It would be very desirable if this type of work could be expanded so as to give a broader coverage both in plant material and geography.

J. A. W.

Concise Gardening Encyclopedia, by Bernard W. Bishop. (Philosophical Library, Inc., New York, 1961). Illustrated with drawings by W. E. Davies and Susan Baillie, and photographs by permission of Messrs. Sutton and Sons of Reading, England. Price, $4.75.

IN the introductory note many fine ideas are given for putting the garden in order for autumn and winter; certain bad weeds to be rooted out and burned, the compost pile forked over, a dressing of lime applied, planting out roses, ornamental shrubs and trees, azaleas and rhododendrons.

This short chapter is followed by "Management and the Soil" and gives instructions in the use of superphosphate, nitrogen and potash mixed in proper proportion for supplying needed fertilizers. "Greenhouse Management for Amateurs" follows, with short notes on the use of clay pots. Old pots should be thoroughly washed and new ones soaked in water before using.

A short paragraph or two gives full credit to bees in the garden.

Herbs are delightfully and concisely dealt with. Anyone wishing to develop a small herb garden will find ample information for its development. Fifteen herbs, beginning with angelica and aniseed and ending with tarragon and thyme, are discussed.

The true beginning of the Encyclopedia proper is a listing and description of twenty-five vegetables and their uses. It is one of the longer

chapters; fifteen pages dealing with vegetables, giving valuable information as to soil, use, cultivation, etc. Several fine photographs illustrate this chapter.

Then comes a very complete descriptive list of one hundred and ten flowers, including annuals, biennials and perennials. The plants are accurately described and invaluable advice given as to soil, fertilization, location in the garden and much other useful advice.

The sixteen pages which follow deal with the culture of vines, strawberries, currants, grapes, blackberries and raspberries, as well as fruit-bearing trees—apples, apricots, peaches, pears and many others. The author suggests careful thought should be given to the location of trees and advises seeking advice from growers or nurserymen.

Poor soil should be improved by the addition of loam when planting and mulching when trees and shrubs begin to bear. With some stone fruit, as cherries, peaches, plums, etc., the addition of lime is most beneficial, indeed a necessity, and, of course, good drainage.

Requirements for the making of a new lawn consist of good drainage, leveling, good seed or turf and greatest care in planting; explicit directions for the preparation of soil, eradication of stones, weeds, etc., and planting of seeds are given. After the lawn is established, directions for its proper care and maintenance are given. The author says, "Get good seed, as it is cheapest in the long run and a well-kept lawn not only shows up the beds and borders to best advantage, but itself is a thing of beauty and the most restful place in the garden."

Before listing approximately thirty shrubs, the author gives instructions as to the proper soil, treatment of heavy clay or light stony soils, and care as to drainage. Some well-known shrubs are listed as lime haters, as azaleas, rhododendrons and heaths.

A comprehensive list of shrubs with their month of blooming follows; the evergreens are marked "ev." Care should be taken in planting to place low growing ones in a position where they will not be crowded or hidden by taller plants. Shrubs properly planted will not require a great amount of work except for pruning off dead branches and unwanted growth.

In conclusion the author devotes a couple of pages to enumerating friendly birds and insects, *e.g.* ladybugs, and the device of tying bacon rinds to lure insect-eating friends.

One of the most useful chapters follows, "Calendar and Reminder. Short, concise instructions for each of the twelve months of the year."

This valuable little book is exactly what the title suggests, "Concise Gardening Encyclopedia," and fills the needs of every gardener for quick, accurate information, especially for the novice. It makes an ideal gift for a beginning gardener.

MYRTLE R. THORGRIMSON

"Green Days in Garden and Landscape" by Desmond Muirhead. (Miramar Publishing Co., Los Angeles, 1961). Price $7.95.

NOT many landscape architects have the opportunity to practice professionally in places with such diverse flora, climate and topography as British Columbia, Arizona and Hawaii, and one would expect that a man with this good fortune, as Mr. Muirhead has had, would write a stimulating book. His book is not only stimulating and informative but a veritable kaleidoscope, an assemblage of sparkling facets of landscape information, poetry and prose, humor and criticism, photographs and sketches. Some of the resulting patterns are more successful than others.

Designed for the amateur and the professional, the book is subdivided, for easy reading, into sections of almost one page, with titles that range from Character and Charm through Construction Features, Plant Materials and Maintenance to Parks, Towns and Cities. One can heartily endorse his praise of the gardener, that much under-rated professional, but find it difficult to accept that only ten percent of architects are grade one. The author's remarks regarding plant materials, including color effects and effects of luxury and drama, are most perceptive, although it seems unfortunate that little space is given to the hardiness zones or natural habitat of individual plants mentioned.

But these remarks may be carping. On the whole, Mr. Muirhead's opinions are indisputable, particularly in regard to the responsibility of the landscape architect and the citizen for civic design and good planning. His criticism of the lack of metropolitan governments in urban areas, public education in planning, the lack of city squares and parks, the ruination by land speculation, the desecration of overhead utilities and the absence of good designers in high places, should be reiterated and send this book from hand to hand.

ERIC W. HOYTE

* * *

The Bonsai Arboretum Unit will be offering classes again in the fall. Fee for Arboretum Foundation members is $15 and $18 for non-members. Details will be announced at a later date. Anyone interested should register with the Foundation office, EAst 5-4510.

The Yew Tree

(Continued from Page 50)

Rocky Mountains in western Montana and Idaho.

The spot where the little yew tree stood in my garden had a peculiar fascination I could never understand. I suppose every gardener has some spot that holds a special interest. Every day I worked in my garden, in spite of myself, I would be walking along the yew path.

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